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File Code: 3420 **Date:** November 1, 2005
Route To:

Subject: Chitty Creek Forest Health Restoration Project (cliftonrd)

To: District Ranger, Clifton Ranger District, Apache-Sitgreaves NF

On September 7, 2005, I traveled to Clifton to meet with Kim Kuhar, District Fire Management Specialist, to assess forest health conditions within the proposed Chitty Creek Forest Health Restoration Project on the Clifton Ranger District, Apache-Sitgreaves National Forest. I describe in this forest health conditions within the project area and make recommendations to minimize bark beetle impacts associated within this project area. In addition, Kim and I visited the lower Eagle Creek area to ground check undetermined damage to sycamore trees that Bobbe Fitzgibbon (FHP Entomologist) had detected in her 2005 aerial survey of the District.

Forest Health Conditions in the Chitty Creek project area

The overall goal of the Chitty Creek Forest Health Restoration Project is to restore ecosystem function, reduce impacts caused by wildland fires, and minimize insect and disease effects through thinning and slash treatment of overstocked stands of mixed conifer and ponderosa pine. The Chitty Creek Restoration Project encompasses 14,000 acres of prescribed fire and up to 1400 acres of thinning. The project area is a diverse landscape of various vegetation types ranging from 6800-9000 feet elevation. The area also supports habitat for Mexican spotted owl (MSO), with one PAC present, as well as Mexican gray wolves within the project area. Chitty Creek proper is a proposed Gila trout re-introduction stream.

Specific ecosystem restoration objectives include:

1. Improve soil conditions and nutrient cycling
2. Improve herbaceous diversity
3. Reintroduce fire to the ecosystem as a natural disturbance factor
4. Improve vegetative diversity, resilience, and overall resistance to large scale high severity fire
5. Improve and enhance habitat for a diverse group of wildlife and aquatic species
6. Protect values at risk such as the MSO PAC, wetland, and riparian habitats

Vegetation surveys conducted in 1998 and 2003 show stand densities ranging from 400 to 2000 trees per acre. The higher ranges occur in the mixed conifer type with up to 70% of the stems per acre in the less than 5” range.

The combination of high tree densities which favor predominantly small size classes and high levels of bark beetle-caused mortality are conducive to widespread crown fire activity.

Additionally the high density of trees increases competition, and combined with drought, reduces resistance to insect and disease within stand of trees. The entire project area is within condition class three and falls within fire regimes one and three.

Three blocks (A, B, and C) totaling 512 acres within the 14,000 acre project are proposed for thin and slash treatment. All blocks will thin all species up to 9" in diameter with the exception of oak species which will be thinned up to 6" in diameter. Slash generated from thinning will be chipped or piled within blocks A and B, and lopped or piled in block C. Prescribed burning is planned in all three areas during fall of 2006.

Small diameter species are targeted to reduce ladder fuels and overall small diameter stems per acre as well as increase individual tree vigor. Large diameter trees will be favored through thinning to maintain old growth trees which are key habitat components for Mexican spotted owl. Some small diameter size class trees will not be thinned in two of the treatment areas to create a mosaic of size classes. In addition, some areas will be thinned heavier to favor sprouting of aspen and assist in restoration of aspen stands which are currently being encroached by conifers.

Treatments in both A and B blocks are intended to open up stands, favor large diameter species and encourage aspen regeneration. Treatments are intended to reduce competition, decrease bark beetle activity, reduce risk of catastrophic fire, retain large diameter trees and restore aspen communities.

Block A/ 38 acres/Mixed Conifer: Thin and chip all species, except oak, 9" or less in diameter. Thinning will occur spring to fall of 2006. Thinning will occur when bark beetles are active with an anticipated increase of 10% mortality to residual conifer species.

Block B/378 acres/Mixed Conifer: Thin and chip all species, except oak, 9" or less in diameter to a spacing of 15-40 feet. Varied spacing is intended to create an uneven aged mosaic while reducing overall stems per acre and ladder fuels. Areas where mixed conifer is encroaching on meadows will be lopped and scattered to allow for restoration of meadow areas. Thinning will occur spring to fall of 2006. Thinning will occur when bark beetles are active with some increase in activity from initial treatment. Slash will be treated in fall of 2006.

Block C /96 acres/Ponderosa Pine: All species up to 9" in diameter, with exception of oak, will be thinned to a spacing of 15-30 feet. Oak species up to 6" in diameter will be thinned to a spacing of 20 feet. Slash will either be piled or lopped and scattered. Thinning will occur spring through early fall. Thinning will occur during bark beetle activity with a 10% potential mortality to residual ponderosa pine. Slash will be burned in fall of 2006. Unit C is approximately ¾ of a mile from highway 191 and will require foot travel to and from the unit.

Based on a walkthrough survey of Block B, Kim and I observed recent and current mortality of Douglas-fir and white fir killed by Douglas-fir beetle (*Dendroctonus pseudotsugae*) and fir engraver (*Scolytus ventralis*), respectively. Tree mortality caused by these bark beetles has been on the increase throughout Arizona over the past three years in response to the ongoing drought and suitable forest stand conditions (USDA Forest Service 2005). In addition, it was evident that most of the aspen stands were in a decadent condition with encroachment of conifers, several canker diseases, and little regeneration present.

Arizona Sycamore Damage in Lower Eagle Creek

Bobbe Fitzgibbon observed an undetermined organism causing discoloration of foliage to deciduous hardwoods during her 2005 aerial detection survey. Therefore, Kim and I surveyed trees along the lower Eagle Creek drainage adjacent to Forest Service Road 217. The primary damage observed by us occurred on Arizona sycamore (***Figure 1***). Based on foliage collected from damaged trees, Bobbe was able to find a *Corythucha* lace bug (Hemiptera: Tingidae) on several of the sycamore leaves (***Figure 2***). There are several species of these lace bugs found feeding on broad-leaved trees throughout the western US (Furniss and Carolin 1977). Two species in the West have sycamore listed as their host. The western sycamore lace bug, *C. confraterna*, occurs in California and Arizona, while the sycamore lace bug, *C. ciliata*, occurs in Colorado, New Mexico, and throughout much of the eastern US. Heavily infested trees turn brown from the frass on the underside of the leaves where the lace bug nymphs feed. Several consecutive years of severe lace bug damage may kill the trees (Barnard and Dixon 1983), especially when combined with drought conditions (Filer *et al*. 1977).

Figure 1. *Discoloration of Arizona sycamore leaves caused by a lace bug in the lower Eagle Creek drainage.*

Figure 2. Corythucha *lace bug collected from damaged Arizona sycamore in the lower Eagle Creek drainage.*

Recommendations

The treatments described for Blocks A, B and C of the proposed Chitty Creek Forest Health Restoration Project are intended to open up stands, favor large diameter tree species, encourage aspen regeneration, and reduce the impacts of both fire and bark beetles. The Southwestern Region has seen a long-term decline in aspen forest cover caused by a combination of stand replacing fire exclusion, increased browse by elk, and encroachment by conifers (Dahms and Geils 1997). Moreover, we have seen accelerated dieback and mortality of aspen throughout much of Arizona over the past 5 years due to both biotic and abiotic factors (USDA Forest Service 2005). Treatments to reduce conifer encroachment and enhance aspen regeneration are important steps to increasing the functional area of aspen on the landscape. Overall, I feel that this is an important long-term project that will work to restore ecosystem function.

It will be important to monitor the residual trees within the treatment areas for bark beetle activity in the near future. If large increases in bark beetle activity are found, additional management actions may be required to minimize their potential impacts. In the long-term, the thinning treatments will improve residual tree vigor and decrease stand susceptibility to bark beetle attack. Guidelines for mitigating effects of bark beetles associated with thinning are included in the Integrated Pest Management Guide for *Ips* species attacking ponderosa pine (Parker 1991).

Funds may be available for FY2006 from Forest Health Protection to deal with bark beetle activity. Requests for these funds should be submitted by October 15, 2005. Please have your staff contact our office if funding will be requested.

If you have any questions regarding my assessment of forest health conditions within the project area, or my recommendations, please let me know. I can be reached at (928) 556-2074.

/s/ Joel D. Mcmillin
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